

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/322675491>

Integrating Positive Youth Development within Coach Education for Youth Sport Coaches

Technical Report · January 2018

DOI: 10.13140/RG.2.2.25197.49126

CITATIONS

0

READS

145

4 authors, including:



Fernando Santos

Polytechnic Institute of Porto and Viana do Castelo

18 PUBLICATIONS 18 CITATIONS

[SEE PROFILE](#)



Karl Erickson

Michigan State University

41 PUBLICATIONS 514 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Youth Coaches' Role in Positive Youth Development [View project](#)



Physical Education and PYD [View project](#)

PORTUGUESE HOCKEY FEDERATION

Fernando Santos

Martin Camiré

Dany J. MacDonald

Karl Erickson



***Integrating Positive Youth Development within
Coach Education for Youth Sport Coaches***

Edited by
Portuguese Hockey Federation

Design by
MEOW ADVERTISING

Printed by
Omiserviços

ISBN: 978-989-54040-0-1

Porto
December 2017

CONTENTS

Foreword	4
Paulo Pereira	
Introduction	5
Research Team	6
Positive Youth Development through Sport: Theory, Research, and Practice	8
Fernando Santos and Martin Camiré	
How do I know if I am effective?	10
Measurement Considerations in Positive Youth Development across Different Youth Sport Contexts	
Dany J. MacDonald and Fernando Santos	
PYD and Life Skills Development within Field Hockey	12
Youth Sport Coaches' Role in Facilitating Positive Youth Development in Portuguese Field Hockey	
Fernando Santos, Martin Camiré, and Henrique Campos	
Youth Sport Coaches' Perspective on Positive Youth Development and its Worth in Mainstream Coach Education Courses	13
Fernando Santos, Martin Camiré, Dany J. MacDonald, Henrique Campos, Manuel Conceição and Patrícia Silva	
The Impact of a PYD-Focused Coach Education Course on Field Hockey Coaches' Perceptions and Practices	14
Fernando Santos, Martin Camiré, Dany J. MacDonald, Henrique Campos, Manuel Conceição and Patrícia Silva	
Practical Implications	16
Fernando Santos, Martin Camiré and Dany J. MacDonald	
Activity A. Promoting Team IQ	
Activity B. Individual Goal-Setting	
Activity C. 2 on 1 Match-Up	
Activity D. Give Voice and Choice	
Activity E. Meaningful Relationships: How and When?	
Activity F. Respect for Others	
Activity G. Leadership for All	
Conclusions and Future Directions	23
Karl Erickson, Fernando Santos, Martin Camiré, Dany J. MacDonald	
References	25
Appendices	

FOREWORD

Paulo Pereira

Dean of the Higher School of Education, Polytechnic Institute of Porto, Portugal

In contemporary society, sport is an important practice worldwide, as it has significant political, social, and economic implications. As such, sport should be viewed as a culturally significant context for youth, because it enables physical development, provides opportunities for learning performance skills, and contributes to a healthy lifestyle. In addition, sport allows youth to learn personal and social skills critical for living in society that can be transferred to adulthood. However, these possible outcomes depend on how sport is used and do not necessarily occur automatically. Our role as researchers and university professors is to prepare youth sport coaches to intentionally attain these type of outcomes in athletes and intervene effectively within the intricate coaching process. Sport organizations and federations also play an important role in providing solid grounds for positive youth development to be promoted at different levels (e.g., competitive, recreational). However, it is critical to reflect on how sport organizations are prioritizing youth development and exposing coaches to learning experiences that are in fact helping the young people of Portugal and in other countries attain PYD outcomes through sport.

Coaches are at the core of the PYD process and should be able to intentionally structure activities to attain these outcomes. Therefore, there is the need to provide research-based high quality learning experiences for coaches to develop a coherent PYD philosophy and practice. Traditionally, there has been a gap between research and practice because both domains have been viewed as separate. Coach education and sport policies should be informed by research such as the one presented in this report, which was conducted with different actors involved within youth sport such as parents, athletes, coaches, and course instructors. This research can definitely help increase PYD outcomes in sport.

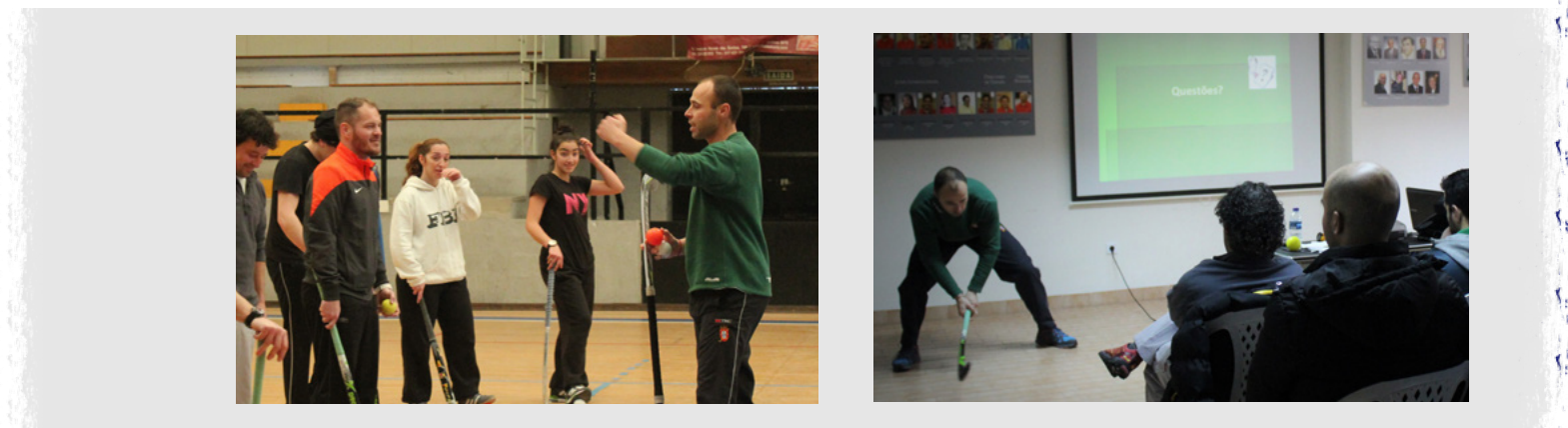
The Higher School of Education of Porto, along with the Portuguese Hockey Federation and researchers from Portugal, Canada and United States have developed a research project that aims to integrate positive youth development within coach education programs. Coaches, physical education teachers, researchers, and other sport professionals working with youth will find in this report the findings of several relevant studies about the PYD approach and how it can be integrated within coach education courses. This technical report should be viewed as a reference concerning PYD in sport in Portugal.

INTRODUCTION

This technical report has been prepared as part of a project entitled “Integrating Positive Youth Development within Coach Education for Youth Sport Coaches” (see <http://bit.ly/1QcpVei> for further information) for the Portuguese Hockey Federation (PHF). The report covers how the project started, its main focus, as well as why and how organizational change was initiated.

Sport federations play an important role in providing the support necessary for clubs and coaches to promote meaningful participation in sport. In addition, coach education programs represent an important tool that sport federations use to expose youth coaches to learning situations conducive to positive developmental outcomes. However, the leaders of sport federations must ask themselves two important questions: (i) Is there a gap between theory and practice as it relates to development in sport? and (ii) Are sport federations providing enough support for coaches to facilitate positive youth development (PYD)? To answer these questions, there is the need to engage in an empirical evaluation process. The technical board of the PHF recognized the need to develop a research-based project to equip youth coaches with the knowledge necessary to coach using a PYD approach. To do so, a partnership was formed between the PHF and Fernando Santos, a sport psychology Ph.D. student at the University of Porto.

The first initiative in 2015 was the creation of a PYD education program. The group was composed of 25 physical education teachers working for a parish council in Porto city and 20 youth coaches working for local field hockey clubs. These teachers and coaches intervened with more than 900 children and youth, a significant portion of which were at risk of social exclusion and came from underserved communities.



(Fig.1) First PYD Intervention in the Portuguese context

Based on this first initiative, many teachers and coaches shared how they were motivated to better understand how PYD could be promoted more effectively. As one field hockey coach stated:

“Coach education courses should include topics like PYD and life skills development because we need to teach these competencies in youth sports.”

The PHF shares an organizational philosophy coherent with PYD-based approaches, which was critical for the research team to facilitate the process of integrating PYD within coach education courses. Thus, at the beginning of 2015, the PHF formally started a project called “Integrating Positive Youth Development within Coach Education for Youth Sport Coaches”. Two researchers from Canada (Martin Camiré and Dany MacDonald), recognized as PYD experts, joined the project alongside three Portuguese university students (Henrique Campos, Manuel Conceição, and Ana Silva). The research arm of the project aimed to understand the impact of coach education on coaches’ ability to teach life skills and foster a PYD climate.

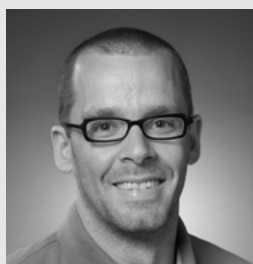
RESEARCH TEAM



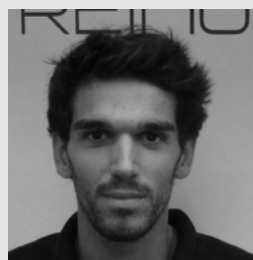
Fernando Santos is a lecturer at both the Polytechnic Institute of Porto and Viana do Castelo and teaches the coach education courses for the Portuguese Hockey Federation and started the project that drove this technical report. His main areas of research interest include coaching and positive youth development.



Martin Camiré is an Associate Professor at the University of Ottawa's School of Human Kinetics in Ottawa, Canada and member of the research team responsible for implementing this project. His areas of interest lie in examining how positive youth development can be facilitated in the context of sport and how coaches can learn to implement strategies to promote the development of life skills.



Dany J. MacDonald is an Associate Professor in the Department of Applied Human Sciences at the University of Prince Edward Island, Canada and also member of the research team responsible for implementing this project. His research interests lie in positive youth development through sport and on developing instruments to measure positive youth development through sport and around methods of helping coaches incorporate.



Henrique Campos is a current master's student interested in positive youth development applied to coaching contexts and Physical Education and member of the research team responsible for implementing this project. He has been working with the Federation on coach education initiatives and on positive youth development-based intervention programs conducted within the school environment.



Karl Erickson is an assistant professor in the Institute for the Study of Youth Sports in the Department of Kinesiology at Michigan State University. His research focuses on athlete development and coaching in youth sport, understanding youth sport as a context for positive youth development. His work places particular emphasis on how interpersonal processes (i.e., coach-athlete interactions) influence developmental outcomes.

Within the project called "Integrating Positive Youth Development within Coach Education for Youth Sport Coaches", several coach education courses were created. One of these courses involved a 24-hour PYD-focused online course entitled "Positive Youth Development" in which contents were made available to coaches with the objective of providing them with the knowledge and tools necessary to facilitate PYD through field hockey. Prior to this course, a pilot study was conducted called "Athletes' Positive Development", in which coaches participated on a voluntary basis. This course was conducted in preparation for a more broad coach education course that was delivered afterwards and allowed the research team to understand coaches' motivation towards PYD and their knowledge of PYD. In conjunction with these courses, several research studies were conducted to understand field hockey coaches' perspectives towards PYD. These studies have demonstrated how restructuring our coach education courses has been useful in addressing coaches' needs. One member of the Portuguese Hockey Federation stated:

"Coaches need more tools to provide high quality developmental experiences to their athletes, specifically to facilitate personal and social development. These components are critical, but coaches struggle in implementing strategies and taking advantage of field hockey's potential towards PYD. PYD through field hockey can become a reality!"



(Fig.2) Directors of the Portuguese Hockey Federation

This technical report reflects the main findings that derived from this project and provides conceptual basis and practical tools for coaches. It also allowed the researchers to identify future directions to be included in the next phase of the project.

POSITIVE YOUTH DEVELOPMENT THROUGH SPORT:

THEORY, RESEARCH, AND PRACTICE

Fernando Santos and Martin Camiré

Coaches are mandated to help athletes develop a range of skills (e.g., tactical, physical, personal) that will enable thriving in both sport and life. In fact, one of the most common expressions in the coaching community is that “sport builds character”, which may lead us to believe that any sport context provides solid grounds for personal and social development (Fraser-Thomas, Côté, & Deakin, 2005). In recent years, it has become much more recognized that coaches need to develop personal and social skills more deliberately to increase positive outcomes. Positive youth development (PYD) has emerged as a strength-based approach that may help coaches to focus on youth’s qualities and create appropriate environments to nourish development. PYD can be defined as a framework that aims to enable a successful transition to adult life by creating contexts in which young people can learn how to be competent, confident, caring for others, and able to establish meaningful relationships (Geldhof et al., 2014). PYD is theorized to occur when a sport context is designed to provide caring coach-youth relationships and when personal and social needs are deliberately addressed.



(Fig.3) Deliberate approach to PYD in a school-based project

Sport researchers have argued that to foster personal and social skills, coaches must view their athletes as resources to be developed rather than problems to be managed. Thus, development does not simply equate to the absence of problems and/or risky behaviors. There is the need for coaches to intentionally develop their athletes’ strengths and assets in ways that may help them overcome the challenges experienced. Sport is a worthwhile setting in which to adopt a PYD approach because it has an inherent skill-building nature. Within a PYD-based approach through sport, several models and frameworks have been developed such as Hellison’s Teaching Personal and Social Responsibility model (Hellison, 2011), Bredemeier’s perspective on moral development (Bredemeier, Weiss, Shields, & Cooper, 1987), and Danish’s life skills development (Danish, Forneris, Hodge, & Heke, 2004). Life skills have been deemed a priority for many youth sport coaches and they can be divided into interpersonal skills such as teamwork and intrapersonal skills such as decision-making. PYD and life skills development through sport have been increasingly portrayed as necessary developmental targets if sport is to fulfill its espoused role as a setting providing high quality developmental experiences.



Youth coaches must behave as role models and can have an important influence on the development of life skills in their athletes. Several researchers (e.g., Camiré et al., 2015) have attempted to identify the key components of successful PYD-based interventions within sport. Recently, Holt et al. (2017) conducted a qualitative meta-study that synthesized the main features for PYD through five hypotheses:

- 1- Distal ecological systems and individual factors influence PYD through sport;
- 2- A PYD climate (based on relationships between athletes and peers, parents, and other adults) can produce PYD outcomes (i.e., through implicit processes);
- 3- PYD outcomes can be attained if a life skills program focus (involving life skill building activities and transfer activities) is in place (i.e., through explicit processes) and in the presence of a PYD climate;
- 4- The combined effects of a PYD climate and a life skills focus will produce more PYD outcomes than a PYD climate alone;
- 5- Gaining PYD outcomes in and through sport will facilitate transfer and enable youth to thrive and contribute to their communities.

The hypotheses within this model of PYD through sport have multiple practical implications for youth coaches. There is a need for coaches to create a PYD climate and simultaneously implement PYD strategies through an explicit approach. If coaches solely depend on an implicit approach towards PYD, life skills development may or may not occur as it is left up to chance. It has become clear that if coaches want to enhance PYD outcomes and life skills development, an explicit approach needs to be in place through PYD strategies, PYD objectives, and concrete opportunities to foster skills (e.g., leadership, decision-making). First, coaches should create their own PYD philosophy that clarifies what life skills should be targeted in their coaching. Coaches should constantly reflect on the possible gaps between their philosophy and practice. Second, coaches should work to create a PYD climate by fostering meaningful relationships with their athletes. This entails caring for youth’s interests and developmental needs, as well as having the necessary communication skills to interact with parents and other actors involved in sport. Third, coaches must develop deliberate PYD strategies to foster PYD outcomes. Such strategies should be implemented in ways that create a safe environment for youth and help them overcome challenges.



(Fig.4) Sample activity promoted to explicitly foster PYD outcomes

Of most importance, PYD and performance should not be seen as incompatible. Rather, PYD should be viewed as an inherent part of coaching, even at higher competitive levels within youth sport. Coaches must recognize that life skills such as teamwork, decision-making, and effort are useful both in sport and in life. Strachan, Côté, and Deakin (2011), in a study conducted with elite youth athletes, demonstrated how performance outcomes can be prioritized alongside a PYD approach. Other researchers (e.g., Santos et al., 2017) have reached the same conclusions.

If PYD is to become accepted as a worthwhile approach to youth sport coaching, there is a need to assess PYD outcomes. The following section of this report examines how PYD can be measured across different youth sport contexts.

HOW DO I KNOW IF I AM EFFECTIVE?

Measurement Considerations in Positive Youth Development across Different Youth Sport Contexts

Dany J. MacDonald and Fernando Santos

Although sport has the potential to facilitate several positive developmental outcomes such as life skills development (Danish et al., 2004) and character development (Camiré & Trudel, 2010), how can youth sport coaches and sport federations determine if PYD objectives have been attained? Data about PYD and life skills development should be collected to provide insights on key components such as (i) quality of the intervention; (ii) youth's engagement and involvement in the program; and (iii) alignment between methodology and intended outcomes. There is the need to understand how intervention programs are influencing coaches' and athletes' PYD behaviors in order to identify strengths and challenges and increase PYD outcomes. Several researchers have developed assessment tools that aim to provide insights on the effectiveness of PYD-based interventions.



(Fig.5) Analysing youth's experiences in a PYD-focused intervention

In Portugal, there is the need to validate instruments such as the Youth Experience Survey with young athletes (MacDonald et al., 2012) and the Life Skills Transfer Survey (Weiss, Stuntz, Bhalla, Bolter, & Price, 2013) as PYD instruments able to measure PYD are scarce and still need to be developed and disseminated in the coaching and research community (Esperança, Regueiras, Brustad, & Fonseca, 2013). Currently, Gaion et al. (2017) validated the Youth Experience Survey for Sport with young Portuguese-speaking athletes from Brazil. This particular instrument has the potential to be used in the Portuguese context and can help measure youth experiences within sport contexts. These researchers conducted the cultural adaptation and validation of the instrument and were able to produce a psychometrically sound instrument capable of measuring PYD in Portuguese-speaking athletes. The Youth Experience Survey for Sport may help researchers conduct an evaluation of youth's experiences within sport. In addition, other researchers (e.g., Martins et al., 2015) have attempted to validate instruments that may help researchers answer other questions related to the varied nature of the youth sport experience.

With regards to PYD-based evaluations, sport federations should define sound organizational philosophies, PYD objectives, and then select the most appropriate instruments to measure the impact of PYD programs. As a matter of fact, sport organizations (i.e., sport clubs, federations, schools) should identify specific outcomes that need to be attained in order to select the most appropriate measurements (e.g., outcomes, experiences) (Duerden & Witt, 2012). The PYD behaviors that should be measured are context-related and should represent a concrete set of PYD objectives (MacDonald & McIsaac, 2016).

For instance, the Youth Experience Survey for Sport (MacDonald et al., 2012) has been used to analyze youth experiences in sport. These researchers provided a modified version of the instrument with 37 items (see descriptive bellow) that included five factors that are measured on a 4-point scale from 1 (i.e., yes, definitely) to 4 (i.e., not at all): (i) personal and social skills, (ii) initiative, (iii) goal setting, (iv) cognitive skills and (v) negative experiences in sport.

The original Youth Experience Survey (Hanson & Larson, 2002) was primarily designed to assess positive and negative youth experience across a variety of setting (e.g., service organizations, sports). However, to better assess the sport context, MacDonald et al., (2012) refined the instrument into the Youth Experience Survey for Sport (YES-S). A short-form YES-S has since

More recently, Rathwell and Young (2016) adapted the Youth Experience Survey instrument to the university setting and created the University Sport Experiences Survey (USES). The USES is an effective tool to analyze PYD in this specific context in which instruments are still scarce. The validation process resulted in a 46-item, 9-factor model that included 5 positive and 4 negative dimensions (see appendix A for the full version of the instrument) that are measured on a 7-point scale from 1 (i.e., strongly disagree) to 7 (i.e., strongly agree). These factors are: initiative, basic skills, interpersonal relationships, teamwork and social skills, adult networks and social capital, stress, negative peer interactions, social exclusion, and inappropriate adult behavior. On this notion, there are several tools that have been used to understand youth's experiences within sport (Vierimaa, Erickson, Côté, & Gilbert, 2012). For example, the Personal and Social Responsibility Questionnaire (Li, Wright, Rukavina, & Pickering, 2008) was developed to assess personal and social responsibility in physical education. This instrument was based on Hellison's (2011) Teaching Personal and Social Responsibility Model and includes two factors with 7 items each: personal responsibility (e.g., 'I try hard', 'I set goals for myself'); and social responsibility (e.g., 'I respect others', 'I respect my teacher'). This instrument is a valid measure to analyze personal and social responsibility behaviors. On the other hand, systematic observational instruments might also provide information on PYD and allow to quantify coach and athlete PYD behaviors (Erickson & Côté, 2016). In fact, observational instruments have the potential to enable a more in depth comprehensive and quantification of athletes' and coaches' PYD behaviors as they occur. For example, Erickson, Côté, Hollenstein and Deakin (2011) developed an observational instrument that quantifies coaches' and athletes' interactions over the course of a practice. This technique, called State-Space Grids, aims to quantify coach-athlete interactions in real time by sequencing coach and athlete behaviors and overall frequency of PYD behaviors. Wright and Craig (2011) have also developed an instrument that aims to measure personal and social responsibility development designated "Tool for assessing Responsibility-based Education", more specifically coaches' PYD behaviors and athletes' outcomes. The first section aims to analyze coaches' strategies through an interval recording system in which observers need to rate coaches dependent on what they do during a 5-min period (see appendix B for descriptions of each strategy). The remaining sections (section 2 and 3) are completed at the end of the practice in the last 5-min period and provide an overall assessment of athletes personal and social responsibility behaviors and how coaches integrated these concepts (i.e., respect for others, effort, self-direction, leadership, transference) in their coaching practice.

In this measure, a broad range of parameters can be assessed and there are several instruments that may help coaches and sport federations to gain insight on how PYD is embedded within youth sport programs. However, there is the need to have a sound PYD philosophy coherent with PYD premises to determine what needs to be assessed and how a certain assessment protocol should be designed (Petitpas, Cornelius, Raalte, & Jones, 2005). If a particular set of positive developmental outcomes is not pursued deliberately there is a high risk of not attaining PYD outcomes, implementing PYD strategies and succeeding is defining PYD measures.

The tools described above have the potential to enable researchers to answer several research questions related to PYD outcomes and experiences. However, it is still necessary to create common grounds about what PYD is and means, and what constructs should be integrated into this definition. This operational definition of PYD will provide a more comprehensive insight on how measures are defined, selected, tested and used within sport. On the other hand, separating outcomes and experiences is an intricate process that needs to be further investigated. The fine line between outcomes and experiences is still very present in some instruments within PYD through sport which creates challenges for researchers who attempt to understand these factors. In the Portuguese context, PYD is still a novel framework as we only found 3 Ph.D. theses in this area (e.g., Martins, 2014; Regueiras, 2012; Santos, 2017) published until July 2017. Therefore, tools within PYD through sport are scarce and need to further developed as this line of inquiry and the emerging research questions requires a quantitative approach that enable a more accurate understanding of athletes' and coaches' PYD behaviors through self-report methods and observational instruments. There is an urgent need to provide validated instruments that may help conduct any sort of PYD measurement (Esperança et al., 2013). This is the next step within the Portuguese context to increase PYD outcomes and move forward to more enriched research designs.

PYD AND LIFE SKILLS DEVELOPMENT

WITHIN FIELD HOCKEY

Youth Sport Coaches' Role in Facilitating Positive Youth Development in Portuguese Field Hockey

Fernando Santos, Martin Camiré, and Henrique Campos

The first study conducted by the research team aimed to analyze field hockey coaches' (n=11) perceptions on their role in facilitating PYD and life skills in youth field hockey. The study employed a qualitative approach through semi-structured interviews conducted with the participants. Prior to implementing any sort of PYD-based intervention program, it was considered important to interact with field hockey coaches and understand their perspective on PYD. In this first study, the research team attempted to answer the following three research questions:

1. What were field hockey coaches' perceptions on PYD and life skills development within youth field hockey?
2. What strategies do field hockey coaches use to facilitate PYD outcomes and life skills development?
3. What do field hockey coaches believe is the role of coach education in helping them facilitate PYD and life skills development?

Regarding the first research question, findings showed that PYD and life skills development were considered important and part of the participants' coaching philosophy. Coaches named multiple life skills that could be developed through participation in field hockey such as effort, teamwork, and leadership. Field hockey was viewed as a context that could lead to many PYD outcomes because there is a strong sense of family within field hockey clubs. In addition, it was believed that coaches generally remain in field hockey clubs longer than in other sports.

The second research question allowed the research team to further understand how PYD and life skills development were being facilitated in the Portuguese context. Based on the semi-structured interviews conducted, it was identified that field hockey coaches used an implicit approach to development, characterized by promoting a positive team climate (i.e., fun and enjoyable). However, there was little evidence that the field hockey coaches employed an explicit approach. On this notion, Holt et al. (2017) have discussed that the combined effects of a PYD climate and a life skills focus will produce more PYD outcomes than a PYD climate alone. Therefore, sport federations should provide specific PYD contents in coach education programs that may help coaches use an explicit approach.

The third research question provided insight into how Portuguese field hockey coaches perceived the importance of coach education courses in helping them promote PYD and life skills development. Half of the coaches believed PYD material was included in coach education while the remaining coaches considered PYD material to be lacking. As the research team analyzed the coaches' responses, it became clear that coaches considered PYD as a psychological feature of coaching and thus had a narrow vision of PYD, which possibly influenced their perceptions on the contents included in coach education programs. Moving forward, sport federations should create coach education courses that properly define PYD and what it means for coaches. Given that the coaches claimed that coach education courses were lacking in PYD material, the researchers further explored this line of inquiry.

YOUTH SPORT COACHES' PERSPECTIVE ON

POSITIVE YOUTH DEVELOPMENT AND ITS WORTH

IN MAINSTREAM COACH EDUCATION COURSES

Fernando Santos, Martin Camiré, Dany J. MacDonald, Henrique Campos, Manuel Conceição and Patrícia Silva

Based on the findings of the first study, the research team developed a second study that aimed to understand field hockey coaches' (n=12) perspective on how coach education courses should be framed. The following research questions drove this study:

1. How is PYD prioritized in the participants' coaching philosophy?
2. How do coaches believe PYD-related material can be included in mainstream coach education courses?

Regarding the first research question, it was possible to conclude that coaches valued PYD and life skills development. However, coaches believed that PYD was not as important as performance outcomes after the age of 15. Prior to the age of 15, PYD was considered critical and a priority for field hockey coaches. In addition, coaches viewed the competition level as influencing if and how PYD would be prioritized. Several researchers have suggested that PYD and life skills development should be prioritized throughout the developmental spectrum (Camiré, 2015; Gould, Collins, Lauer, & Chung, 2007). Moving forward, coaches must reflect on how PYD may represent a necessary approach to coach at all youth levels.

The second research question helped the research team understand how field hockey coaches believed coach education courses should be designed in terms of (a) contents; (b) combination between theory and practice; (c) evaluation. Field hockey coaches mentioned how PYD contents should represent a significant part of any coach education course, particularly within level one courses. If field hockey is to become a developmentally sound environment for youth athletes, then sport federations must explicitly include PYD material in their coach education programs (Newman, Ortega, Lower, & Paluta, 2016; Santos, Corte-Real, Regueiras, Dias, & Fonseca, 2016). In addition, because most coach education courses promoted by the Portuguese Hockey Federation are conducted online, coaches stated a need for having a stronger practical component as this was perceived as a key factor. In fact, researchers have argued that coaches learn more effectively through interaction and lived experiences (Lemyre, Trudel, & Durand-Bush, 2007). Given this, practical applications should include (a) individual sessions aimed at addressing coaches' challenges and needs while promoting PYD; (b) opportunities to experiment with PYD activities and strategies, and (c) autonomous tasks that imply implementation of PYD activities into coaching practices without direct supervision. Regarding the first component, in certain cases coaches have considered that PYD is context-specific and that coach education programs do not provide the necessary support to allow transfer to their specific sports setting. Therefore, it is necessary to complement formal coach education sessions with individual sessions that enable a more comprehensive analysis of coaches' challenges, strengths, fears, and needs. These sessions have several resemblances with the supervised practicum coaches have to complete in the Portuguese context prior to getting their coaching certificate. In addition, coach education courses should provide coaches' the opportunity to test PYD strategies and activities, learn from their mistakes and achievements, and 'learn by doing'. In fact, coaches have identified mainstream coach education courses as mainly theoretical and absent of relevant practical experiences which is a cause for concern and may lead coaches to distort what PYD means for them, how they can facilitate PYD outcomes, and how to assess PYD behaviors. The third component is also critical if coach educational is to promote behavioral change and coaches' autonomous engagement in PYD-focused interventions as coaches should develop autonomous tasks between sessions in order to transfer learning within PYD to their coaching practice. Within coach education programs, evaluation methods should align with coach education objectives and teaching methodologies as course instructors should enable reflection by allowing coaches to create their coaching philosophy, reflect on the coaching experiences within PYD, and share didactic material. There is a need to teach coaches how to reflect if the aim of coach education is to have coaches theoretically knowledgeable in PYD.

THE IMPACT OF A PYD-FOCUSED COACH

EDUCATION COURSE ON FIELD HOCKEY

COACHES' PERCEPTIONS AND PRACTICES

Fernando Santos, Martin Camiré, Dany J. MacDonald, Henrique Campos, Manuel Conceição and Patrícia Silva

The findings of the second study were used to frame an online PYD-focused coach education course for seven coaches. The aim of this study was to analyze if a research-based coach education course could influence coaches’ perceptions and practices of PYD. Two research questions guided this study:

1. Process Evaluation: What were the field hockey coaches’ perceptions on how the coach education course was implemented?
2. Outcome Evaluation: What behaviours changed in the participants?

CLASS	CONTENTS
CLASS 1	-Defining PYD and life skills - Fundamental principles of PYD - Sport as a context conducive to PYD
CLASS 2	- Designing sport programs conducive to PYD - Climate - Meaningful relationships - Integrating PYD and performance goals
CLASS 3	- Designing sport programs conducive to PYD -Taking personal and social responsibility model (Hellison, 2003) - Levels of responsibility - Challenges
CLASS 4	- Debrief of PowerPoint presentations - Integrating PYD-based strategies
CLASS 5	- Integrating PYD-based strategies (following what was taught and reflected in last session) - Analyzing how the CEC provides enough support to promote PYD and life skills development
CLASS 6	- Assessing PYD-based interventions - What needs to be assessed? - How do I assess PYD behaviours? - An example from Project SCORE!
CLASS 7	- Assessing PYD-based interventions - More examples from Project SCORE!
CLASS 8	- Final considerations

Table 1. Structure of the Course.

Regarding the first research question, the participants found that the online format enabled them to participate in a 24-hour PYD course, which would not have been possible in an in-person format. Several researchers have argued the need to incorporate hybrid formats within coach education forums that combine online with in-person moments (Project SCORE, 2015; Vella, Crowe, & Oades, 2013). On this notion, online platforms make coach education courses more accessible to youth coaches. However, there are limitations that should be addressed as youth coaches “learn by doing” and need practical moments that may allow for the creation of lived PYD coaching experiences (Falcão, Bloom, & Gilbert, 2012; Vella, Oades, & Crowe, 2013).

In addition, coaches also believed the course instructors’ expertise and pedagogical approach facilitated the process of learning how to promote PYD within field hockey. Finally, coaches mentioned that the reflective journal was an effective tool to assess learning outcomes attained throughout the course as it enabled them to reflect on their experiences.

The second research question was focused on two field hockey coaches who were observed before, during, and after the coach education course to assess behaviour change. It was possible to understand that coaches’ PYD behaviors were positively influenced by the course as the participants implemented some of the PYD strategies and objectives shared by the course instructors. In fact, after the course ended, the participants did not go back to their previous approach to coaching (i.e., negative teaching strategies) but rather deliberately promoted PYD. Coaches were challenged to implement PYD by using the tools provided in the course in a real coaching scenario that entails pressure to win and perform, different perspectives on youth development by other stakeholders, and lack of relational time. There is the need to provide time for coaches to become effective while facilitating PYD as this is an intricate process within organized youth sport which in some cases involves a subculture of ‘winning at all cost’ that neglects PYD. In addition, short and long duration coach education courses have both been shown effective in helping youth coaches become better equipped to face the emergent challenges within a PYD-focused intervention. Researchers have highlighted that besides deciding about how long a course will last it is critical to reflect on how it should be framed to enable change in coaches’ PYD behaviors (e.g., Vella, Crowe, & Oades, 2013). This study allowed the research team to conclude that an online format to coach education can be useful, but it has its limitations and challenges that sport federations must consider.

These limitations are associated with the extent to which coaches’ PYD behaviors change through an online format as exposure may not translate in actual and permanent PYD behaviors. Future interventions should incorporate a practical component in coach education courses as coaches need opportunities to practice implementing PYD strategies. This obviously presents challenges to small federations like the PHF, as most coaches do not earn a salary in field hockey clubs, have other professional tasks to consider, and are not able to spare significant amounts of time to coach education (Resende, Sequeira, & Sarmiento, 2016). However, it may be feasible to include hybrid formats within coach education programs that include both an online and a practical component. Nevertheless, the following are recommendations we offer to sport organizations that may help improve future PYD-focused coach education courses.

1. The practicum is mandatory in the Portuguese context and a necessary requirement for coaches to become certified. Therefore, sport federations should use this practical component that lasts for an entire sport season to incorporate a PYD mandate.
2. Coaches should be exposed to PYD contents throughout their entire coach education as they will have to take part in a significant number of hours of training to renew their coaching certificate.
3. Sport federations should provide a balance between theory and practice as coach education courses should be designed to allow experimentation between sessions.



(Fig.6) Poster for the first international seminar on PYD through sport

PRACTICAL IMPLICATIONS

Fernando Santos, Martin Camiré and Dany J. MacDonald

This section includes sample activities and PYD strategies that resulted from all the research/interventions conducted within the project based on the work conducted by several researchers in the field of PYD considered experts in youth development (Camiré, Forneris, Trudel, & Bernard, 2011; Strachan, MacDonald, & Côté, 2015).

General considerations:

SAFE Skill-Building

Sequenced, Active, Focused, Explicit

As coaches promote PYD, there are several principles that may help to structure activities conducive to PYD outcomes. On this notion, there is the need to create a Sequenced progression in order to help young athletes learn and transfer life skills. Life skills take time to acquire and a coordinated sequence of activities is needed to allow athletes to understand a specific life skill. In addition, young athletes should be Active contributors to their learning experiences as it is necessary to get athletes to practice life skills in addition to provide instructions about them. Practices should also be Focused on specific life skills as coaches should Explicitly target certain life skills by integrating them within technical, physical, and tactical skills development. Moving forward, in this section, we will provide a set of sample activities and didactic material that may help coaches facilitate PYD and life skills development.



(Fig.7) Field hockey coach setting expectations

Activity A. Promoting Team IQ

This activity focuses on teamwork which is critical for team performance. Several steps are proposed in order to: (a) provide opportunities for athletes to identify strengths and challenges within teamwork-related skills (e.g., working for common goals) using the scale below; (b) identify what you need to work on and set clear expectations about these objectives (e.g., ‘This week, we will focus on working for team goals’); (c) provide concrete and systematic opportunities for athletes to work on specific skills. For instance, coaches can do this assessment every month, define objectives for each week and then refine objectives throughout the season.

Scale

Rate (1-5) the extent to which you contribute to the team in these aspects:

- | | |
|-----------------------------|-----------------------------------|
| ___ Promoting team unity | ___ Ensuring proper communication |
| ___ Promoting team identity | ___ Working for team goals |
| ___ Fostering team pride | ___ Respecting team roles |

Top two elements to work on:

1. _____
2. _____

Sample Progression:

- Step 1: Calculate scores for “elements to work on”.
- Step 2: Identify, on a team level, what aspects of team cohesion need most improvement.
- Step 3: Provide team captains with real responsibilities to work towards improvements.

Concrete PYD Strategies to Address “elements to work on”:

- Provide opportunities for athletes to share teamwork objectives with their teammates and lead a group of athletes towards that objective in an activity during a practice.
- Use individual conversations to empower leaders to help other athletes to have team goals.
- Provide strategies for athletes to solve conflicts within the team and create formal and informal team meetings to define short- and long-term goals, expectations for each athlete and consequences. The coach will be a mediator and guide athletes towards expected behaviors.

Activity B. Individual Goal-Setting

Coaches constantly try to set team and individual goals to increase team performance and teach youth athletes the advantages of setting clear expectations. Therefore, this activity aims to help athletes understand how objectives can be framed and the need to focus on the process instead of only focusing on outcomes. The key idea is to show athletes that goals should be process-oriented, framed positively, attainable, challenging, and realistic. The principles of this activity can be used in a broad range of scenarios.

Sample Progression:

Step 1: Place athletes in pairs at a goal.

Step 2: Ask the athletes to set an objective for the number of missed shots out of 10. Tell the athlete who is not shooting to retrieve the ball.

Step 3: Once both athletes have shot, ask them to repeat the activity, but this time by setting a goal to “focus on one aspect related to the mechanics of their shot” (ex: “I will lean forward while I strike the ball”).

Step 4: Ask your athletes: How did you feel when you attempted to reach the two different types of goals you set for yourself?

Step 5: Have a quick debrief with your athletes:

- Tell them how “not missing a shot” is a negatively-framed outcome goal and how “focusing on striking the ball correctly” is a positively-framed process goal.
- Explain how positively-framed process goals are preferred because they offer greater control and are focused on specific actions.
- Emphasize that the lesson here is that they are more likely to improve and experience success if they set process goals that are framed positively.
- Keep stats to recognize improvements.

PYD Strategies:

- Value the process and provide positive feedback when improvements occur (“Well done! You have improved how you are striking the ball”). It is key to be coherent in terms of the goal that are set and the type of feedback that is provided.
- Select players who have understood this life skill activity to help others who may struggle in understanding it (e.g., frame pairs considering this criterion).
- Use the initial conversation and the final reflection to stress the importance of goal-setting and how it can be used in other life domains.

Activity C. 2 on 1 Match-Up

As coaches, it is important to have athletes who are able to persevere when challenges appear in game situations, but also in other life domains. Life skills are extremely important to attain performance outcomes, whether it be in sport, at school, at home, and in the community. In this activity, coaches will promote a 2 on 1 situation as the aim is to create a challenge for the athlete who is defending and help him understand how he can overcome this situation (e.g., what technical and tactical may be used) and use this life skill outside sport (e.g., perseverance can be used to work hard to get a good grade in a difficult course).

Sample Progression:

Step 1: Define perseverance as an objective for this practice.

Step 2: Define or let players form groups of four players.

Step 3: Start with two on two play and then remove one player.

Step 4: Continue play until the lone player reacts (ex: frustration, anger, exhaustion). Intervene at the first sight of a reaction.

Step 5: Have a quick debrief with your athletes:

- Tell them how certain technical skills may help them properly defend the two on one scenario.
- Explain how it is important to persevere as two on one scenarios may occur often during a game.
- Emphasize that the lesson here is to try hard when there are challenges, whether they be in sport or in life.
- Recognize your athletes’ efforts, especially those who were the lone defenders.

PYD Strategies:

- Use team meetings during your practices to stress the importance of this life skill and to provide guidance for athletes to overcome challenges.



(Fig.8) Providing positive support for field hockey athletes

Activity D. Give Voice and Choice

Autonomy has been considered key for athletes’ success on and off the field. On this notion, coaches should provide opportunities for athletes to choose activities, select teams, and work on specific skills without constant and direct supervision. By doing so, it will be possible to create an intrinsically motivating climate in which athletes are active contributors to their own learning experiences and therefore stay motivated. This activity provides athletes with the opportunity to make choices, reflect on their decisions, and become active contributors to the practice. This type of activity should be adjusted according to athletes’ competence and ability to work by himself/herself.

Sample Progression:

Step 1: Present three activities.

Step 2: Let athletes choose which one out of the three activities best fits the skills they want to improve. Or, give athletes opportunities to suggest another activity (not included in the three you presented) to be included in the practice.

Step 3: Following the activity, debrief with your athletes:

- Focus on the decisions made by the athletes (e.g., Why did you choose this particular activity?) and discuss the positive and negative consequences (e.g., Was it appropriate for your skill level?; Would you change your decision and why?).
- Explain how each activity might help athletes improve specific sport skills and discuss the criteria that should be considered for making the most appropriate decision.
- Reinforce athletes’ decision-making (e.g., highlight the value of an activity that was chosen or created by your athletes).
- Explain to your athletes how proper decision-making is an essential skill outside of sport and how athletes can improve their decision-making by assessing the consequences of their choices.

PYD Strategies:

- Plan one-on-one conversations to attend to the specific needs of each of your athletes. It is important for you to foster their autonomy progressively. Therefore, provide your athletes with more or less guidance based on the information you gather from the one-on-one conversations. Such information will help ensure your suggestions for autonomy are developmentally appropriate.
- Value athletes’ suggestions by genuinely taking time to listen to their ideas and guide them in their decision-making. Letting your athletes make their own choices will inevitably led to adaptive and maladaptive consequences. Use these consequences as sources of learning and reflection.
- Design activities in each session that provide your athletes with some opportunities for autonomy-based skill building.

Activity E. Meaningful Relationships: How and When?

It is important for coaches to create meaningful relationships with their athletes by being emphatic, caring, and considering everyone's needs. In fact, coaches need to be keenly aware of how they are creating meaningful relationships and how these relationships must be constantly nurtured.

Strategy 1: Hold regular meetings with each athlete to get to know him/her on a personal level and understand their interests and needs.

Strategy 2: Encourage your athletes and continuously get them engaged in team goals, whether sport-related or life skills-related. For sport to be a safe and inclusive environment, all of your athletes' needs must be considered.

PYD Strategies:

- Use team meetings during your practices to stress the importance of this life skill and to provide guidance for athletes to overcome challenges.

Activity F. Respect for Others

Fostering respect for the rights and feelings of others is critical if youth athletes are going to be successful in sport and in life. How can a coach facilitate respect explicitly? Here are several strategies that may help you integrate this life skill in your coaching:

Sample Progression:

Step 1: Start a discussion at the beginning of the sport season to create a set of rules that facilitate respect within the team. This discussion can occur during a formal or informal team meeting about the rules that might help athletes respect each other, control their impulses and safely participate in sport. Get your athletes to vote on the rules they want included in the team manual, which is signed by the coach and by all the athletes. Visually display these rules on a board near the locker room so everyone can have access to them. The key idea here is for you to create a set of rules and consequences for and with athletes. Involving them in this process will increase their buy-in.

Step 2: In drills during practice, take advantage of teachable moments to promote respect. For example, if an athlete is yelling obscene remarks at an opponent during a scrimmage, use this instance to stress how such behaviors detract from everyone benefiting from a positive sport experience. In addition, use the team manual to reiterate the rules that were agreed upon as a team. You can consider creating a space near the bench (i.e., a 'cool off area') where athletes can go seek your guidance if they are having problems respecting others. It is important to provide immediate support if they venture to the 'cool off area'. Understand each athlete's perspective on what happened if there is an argument and help them reach a solution and compromise.

PYD Strategies:

- Avoid excessively punishing athletes (e.g., run for 20 minutes) for disrespectful behaviors. Instead of attempting to eliminate negative behaviors, focus on what they can constructively do next time to demonstrate higher levels of respect.
- Reinforce your athletes, through praise and constructive comments, when respectful behaviors are exhibited in a game or practice.

Activity G. Leadership for All

It is important to provide leadership roles to all youth athletes as they can learn important lessons that can help them in sport and most assuredly in life. This activity involves identifying a leader or a group of leaders, provide specific tasks for them to fulfill, and prepare them for those tasks.

Sample Progression:

Step 1: Have a team meeting and discuss what it is expected from a leader.

Step 2: Select a team leader or a group of leaders (e.g., mix more experienced with less experienced leaders). Consider rotating the leaders so that each athlete has a chance to lead multiple times over the course of a season.

Step 3: Identify what is expected in a particular activity and what tasks leaders must fulfill (e.g., 'Today, we are going to focus on being close to the ball, holding the stick, and dribbling. As a leader, you are expected to focus on these three aspects and provide appropriate feedback to your teammates so they can improve their technical skills').

Step 4: Create a series of opportunities for leaders to take on progressively more complex leadership tasks. For example, start by placing your athletes in pairs and have one athlete lead the other in a drill. Progress in complexity by have your athletes each take turns to lead a drill that involves a larger group of individuals (e.g., a drill that involves the entire team). Ultimately, you want to progress to where your athletes can lead an entire practice on their own, paving the way for them to become the next generation of coaches.

Step 5: Debrief with your athletes:

- Ask your athletes what they learned by being afforded a leadership role.
- Ask them to explain to you what they attempted to teach during the drills they were assigned as leaders and what were the challenges they faced (e.g., as a leader, I was not able to focus on helping my teammates being close to the ball so I will try to be more concrete with my feedback next time).
- Emphasize how leadership can be used outside of sport. For instance, challenge players to help younger students at school or siblings who struggle with, let's say, science class.

PYD Strategies:

- Avoid solving your leaders' challenges. Instead, get them to reflect on solutions and guide them towards a proper decision.
- Create teams of leaders, comprised of three/four athletes, with varying leadership abilities. This way, high quality leaders may help other leaders who are still improving their leadership skills.
- Provide opportunities for ALL athletes to learn how to become effective leaders. Consider placing a sheet near the locker room that acts as a 'leadership calendar', telling your athletes when they are going to lead.

GUIDING PRINCIPLES

In this section, we provide some examples on how to integrate PYD and life skills development in your lesson plans in order to have explicit objectives, clear means of integrating a particular life skill and proper strategies. This approach will help coaches have clear guidelines for their coaching practice.

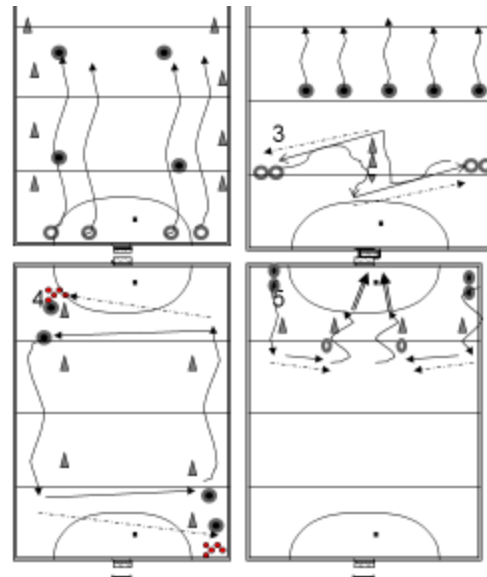
Data-Semana 25 a 29 Maio 2009
Sessão

Organização

- 1- Conversa e explicação dos objetivos do treino;
- 2-Aquecimento – arrancam todos ao mesmo tempo a ver quem perde menos vezes a bola; quem defende não pode sair do rectângulo; bola perdida vai defender;
- 3- Condução bola com paragem de bico – Conduzir a bola de direita e ao apito parar a bola de bico. Arranca após apito;
- 4 - Drible de bico seguido de passe – Conduzir a bola até aos cones, fintar os cones puxando de bico, passar de flat e sprintar até à posição do colega que recebeu que fará o mesmo do lado oposto;
- 5 -Passe de flat –Conduzir a bola até ao cone e passar de flat/push;
- 6 - Circuito – condução, passe dir/esq, finalização;
- 7 -Jogo/torneio;
- 8 – Descompressão/conversa

Aspectos técnico-táticos a ter em conta:

- Bola colada no stick;
- Precisão no passe;
- Cabeça levantada;
- Jogo de equipa – cooperação;
- Respeito – regras e colegas;



Data-Semana 25 a 29 Maio 2009
Sessão

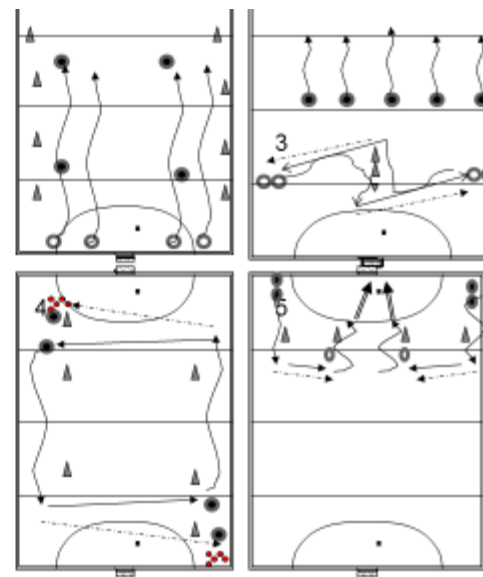
Objetivos de responsabilidade

➤ **Respeito**

- Aceita as regras de boa educação e aplicá-las;
- Sabe "dar a vez" a um colega;
- Sabe perder e vencer.
- Trabalha em equipa e em parceria;
- Procura aprender e cooperar com todos;
- Aceita o espírito desportivo e o fair-play, respeitando as regras das atividades e todos os intervenientes.

➤ **Participação**

- Revela empenho e concentração para melhorar a sua técnica de base;
- Procura aperfeiçoar as habilidades motoras nos diferentes tipos de atividades conjugando a sua ação com a dos colegas;
- Mostra empenho nas atividades a realizar;
- Procura sempre progredir.



CONCLUSIONS AND FUTURE DIRECTIONS

Karl Erickson, Fernando Santos, Martin Camiré, Dany J. MacDonald

In this section, the main conclusions of the first phase of the project (2015-2017) will be presented and the key components of the second phase will be highlighted.

Since 2015, researchers working in the context of Portuguese field hockey have conducted several studies that have increased our knowledge of how PYD can be best facilitated in the sport environment. For example, descriptive studies have investigated (a) the role of coaches in the development of youth (Santos, Camiré, & Campos, 2016) and (b) the impact of a PYD-focused training program on coaches' perceived ability to foster developmental outcomes in youth (Santos et al., 2017). Findings from these studies allude to the potential of PYD-focused coach training in helping coaches facilitate PYD outcomes. However, researchers must focus on using intervention protocols that are evaluated using validated systematic observational tools. Therefore, the second phase of the project will focus on objectively measuring coaches' and athletes' PYD behaviours longitudinally over the course of an entire competitive season with a validated systematic observational tool (i.e., state-space grid) developed by Karl Erickson who will be part of the research team.

The proposed research will utilize an innovative methodology known as state space grids (SSGs) (Hollenstein, 2007; Lewis, Lamey, & Douglas, 1999), which are a dynamic systems-based method for visually representing and quantitatively analyzing real-time behavioral data for multiple interacting agents (i.e., coach and young athletes, in this case) simultaneously. Conceptually, most previous research on coaching behaviours has taken a unidirectional view of influence (also see Kahan, 1999; Horn, 2008).

That is, the influence of coaches' behaviours on athletes' experiences has been the focus, without regard for how athletes' reactions and responses may in turn influence future coach behaviours, and thus athletes' development. In this view, the coaching process is done by coaches to athletes, which reduces athletes to non-contributing recipients of outcomes and ignores the active (the 'A' in SAFE) role of the athlete to influence or contribute to their own development. This unidirectional view also does not offer insight into how the effects of a particular coach behaviour may be influenced by preceding or subsequent athlete behaviours. For example, is positive reinforcement always necessary or effective in promoting positive outcomes, even if an athlete is gloating excessively? In contrast, a multidirectional conceptualization of coach-athlete interactions (Bowes & Jones, 2006; Cushion, Armour, & Jones, 2006; Jones & Wallace, 2005) suggests that coaching is, in fact, a complex, reciprocally-influential process based on systems of social interaction. Poczwadowski, Barott, and Jowett (2006) identified a number of pertinent research directions to incorporate this conceptualization into the study of coach-athlete relationships. In particular, they suggest shifting from a focus on the individual to the inter-individual, specifically coach-athlete reciprocal relationships as the central unit of study and diversifying methodological approaches in order to best reflect these reciprocal relationships and their functioning.

In response to similar gaps relating to interactive relationships and their variability over time, researchers in developmental psychology have proposed dynamic systems views as melding and accounting for children's development as being driven by both children themselves and by significant others (Van Geert, 1998). A dynamic system is composed of the reciprocal interaction of individual components of the system which influence and are subsequently influenced by each other to produce the functioning of the entire system (Lewis, 2000). In this instance, the dynamic system in question is the coach-athlete reciprocal relationship, with coach and athletes as distinct components. Through these direct lower order interactions between components, dynamic systems self-organize over time into stable higher order patterns of functioning (Granic & Hollenstein, 2003). This emergent self-organization, the idea that a system creates its own structure rather than being guided by some existing pattern, is a central principle of dynamic systems theory (Thelen & Smith, 1998). In developmental psychology, researchers have productively examined reciprocal dyadic interaction between children and parents (e.g., Fogel & Branco, 1997; Granic, Hollenstein, Dishion, & Patterson, 2003; Hollenstein & Lewis, 2006) and between peers (e.g., Caprara, Dodge, Pastorelli, Zelli, 2007; Dishion, Nelson, Winter, & Bullock, 2004; Steenbeek & Van Geert, 2005, 2007) by conceptualizing them as dynamic systems.

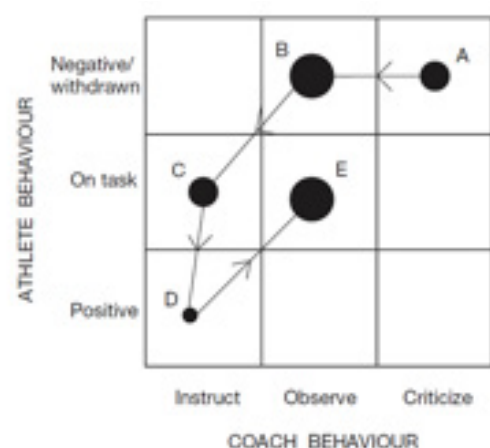
SSGs conceptualize individuals within a one-to-one or group reciprocal interaction as a dynamic system (i.e. coach-child/children) and allow researchers to examine the reciprocal nature and dynamic structure of interactions over time. The method provides a graphical representation of the total state space (i.e. the range of interaction possibilities) for the system and maps the trajectory of the mutually-defined interaction in real time (i.e. moment-to-moment). Simply put, state space grids provide a visual and quantifiable profile that represents how the coach and athlete(s) interact together over time. To create a state space grid, an observational coding framework that accounts for all the behaviours of each role in the system is created. By conceptualizing the total 'state space' for the interactions in question as defined by all possible behaviors for the coach along one axis and all possible behaviors for the athletes along the other, SSG's are in effect a grid coordinate system. The 'state' of the behavioral interaction at any given moment is then located within this overall space according to its x- and y-coordinates – the coach's and athletes' simultaneously expressed behavior.

When either the coach's or athletes' behavior (the x- or y-coordinate) changes, a new location within the state space is plotted and thus it is possible track both the behaviors constituting an interaction (reciprocity) and the interaction's trajectory through real time (e.g., over the course of a practice - temporality).

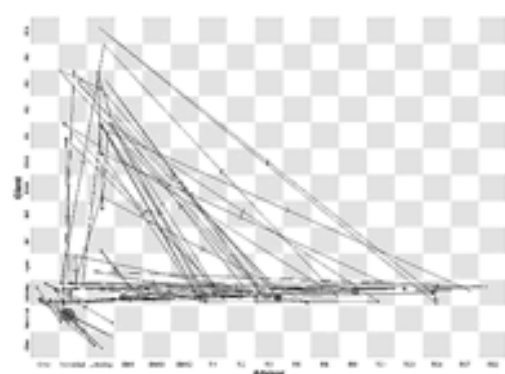
Measures that capture the reciprocity (e.g., if and how each role responds and adapts to the other) and temporality (e.g., time-linked structure within the trajectory) of the interaction trajectory can then be quantified and used in subsequent statistical analyses to compare between different coaches and their athletes. By linking these measures to athletes's PYD outcomes, novel research questions that investigate the dynamic and real-time coach-athlete interactions can be explored. Behavioral data for coaches and athletes will be collected via systematic observation of the videotapes of recorded practices. The observational data coding will be conducted in a continuous manner for both coach and athletes, such that the activation of a particular code indicates the end of the previous code for that role, resulting in a continuous stream of time series data for both coach and athletes (rather than a simple subjective overall score, as with global rating scales that do not account for the temporal dimension of interactive behavior). Once coach and athletes' behaviors are coded from video recordings, the continuous time series behavioral data will be exported to the Gridware program (Version 1.1: Lamey, Hollenstein, Lewis, & Granic 2004), a software package designed for state space grid methodology. The primary function of the Gridware software is to calculate and analyze behavioural data for the coach-athletes reciprocal relationships, in the form of mutually-defined interaction trajectories through the training or competition.

As an example, see Figure 1 for a very simplified example of an SSG for a short hypothetical coach-athlete interaction. The functioning of the system is then located on the grid by coding which specific behaviours the coach and athlete are concurrently exhibiting at any given point in time (as a very general hypothetical example, the coach yelling criticism while the athlete pouts). This corresponds to a specific cell within the state space grid. This is represented graphically by a point in that particular cell, with the diameter of the point corresponding to the duration that the system stays in that cell (e.g., coach keeps yelling and athlete keeps pouting – see point A in Figure 1). Since the location of the system is defined by both a coach and an athlete behaviour, the moment either the coach or the athlete (or both) changes their behaviour (e.g., coach stops yelling to observe the athlete, athlete keeps pouting – see point B in Figure 1), the system has shifted to a new location. This new mutually-defined location corresponds to a different cell in the grid, with the system represented by a point in that cell, and a line is drawn connecting the two points in the two different cells. This process continues every time there is a change in either coach or athlete behaviour for the course of the observation. Continuing with the hypothetical example from Figure 1, the coach might then offer some technical instruction, to which the athlete responds by re-engaging in practice activities (see point C). If the instruction is helpful, the athlete might acknowledge agreement with what the coach is saying (see point D) before returning to effortful training while the coach observes (see point E).

Thus, the real-time trajectory of the system – the coach-athlete interaction – is mapped within the total possible state space as a series of dots (representing behaviour content and duration) connected in a sequential order. See Figure 2 for a slightly more complex SSG created using real coach and athlete displaying a short duration (several minutes) interaction trajectory. The trajectory can then be analyzed with regard to the areas of the grid within which it functions or to which it is 'drawn', how much of the total state space the system makes use of, the patterning of that use, and the sequences of grid locations through which the system (the coach-athlete interaction) moves. At the simplest level, the trajectory is quantified through either the duration spent in particular cells or areas of the grid or by the number of discrete 'visits' to those cells or areas (or a combination of the two). These two measures provide the basis for more detailed analysis of more complex measures.



(Fig.9) Simplified state space grid



(Fig.10) State space grid of coach-athlete interactions

REFERENCES

- Bowes, I., & Jones, R.L. (2006). Working at the edge of chaos: Understanding coaching as a complex, interpersonal system. *The Sport Psychologist*, 20, 235-245.
- Bredemeier, B., Weiss, M., Shields, D., & Cooper, B. (1987). The relationship between children's legitimacy judgments and their moral reasoning, aggression tendencies, and sport involvement. *Sociology of Sport Journal*, 4(1), 48-60.
- Camiré, Forneris, T., Trudel, P., & Bernard, D. (2011). Strategies for helping coaches facilitate positive youth development through sport. *Journal of Sport Psychology in Action*, 2, 92-99.
- Camiré, M. (2015). Reconciling competition and positive youth development in sport. *STAPS*, 109, 25-39.
- Camiré, M., & Trudel, P. (2010). High school athletes' perspectives on character development through sport participation. *Physical Education and Sport Pedagogy*, 15(2), 193-207.
- Caprara, G.V., Dodge, K.A., Pastorelli, C., & Zelli, A. (1997). How marginal deviations sometimes grow into serious aggression. *Child Development Perspectives*, 1, 33-39.
- Creswell, J. W. (2003). *Research design: qualitative, quantitative and mixed methods approaches* (2.a ed.). Thousand Oaks: Sage.
- Cushion, C.J., Armour, K.M., & Jones, R.L. (2006). Locating the coaching process in practice: Models 'for' and 'of' coaching. *Physical education and Sport Pedagogy*, 11, 83-99.
- Danish, S., Forneris, T., Hodge, K., & Heke, I. (2004). Enhancing youth development through sport. *World Leisure*, 3, 38-49.
- Dishion, T.J., Nelson, S.E., Winter, C., & Bullock, B. (2004). Adolescent friendship as a dynamic system: Entropy and deviance in the etiology and course of male antisocial behaviour. *Journal of Abnormal Child Psychology*, 32, 651-663.
- Duerden, M., & Witt, P. (2012). Assessing program implementation: What it is, why it's important, and how to do it. *Journal of Extension*, 50(1), 1-8.
- Erickson, K., & Côté, J. (2016). A season-long examination of the intervention tone of coach-athlete interactions and athlete development in youth sport. *Psychology of Sport and Exercise*, 22, 264-272.
- Erickson, K., Côté, J., Hollenstein, T., & Deakin, J. (2011). Examining coach-athlete interactions using state space grids: An observational analysis in competitive youth sport. *Psychology of Sport and Exercise*, 12, 645-654.
- Esperança, J., Regueiras, L., Brustad, R., & Fonseca, A. (2013). Um olhar sobre o desenvolvimento positivo dos jovens através do desporto. *Revista de Psicologia del Deporte*, 22(2), 481-487.
- Falcão, W., Bloom, G., & Gilbert, W. (2012). Coaches' perceptions of a coach training program designed to promote youth developmental outcomes. *Journal of Applied Sport Psychology*, 24, 429-444.
- Fogel, A., & Branco, A.U. (1997). Metacommunication as a source of indeterminism in relationship development. In A. Fogel, M.C.D.P. Lyra, & J. Valsiner (Eds.), *Dynamics and indeterminism in developmental and social processes* (pp. 65-92). Hillsdale, NJ: Lawrence Erlbaum.
- Forneris, T., Camiré, M., & Trudel, P. (2012). The development of life skills and values in high school sport: Is there a gap between stakeholder's expectations and perceived experiences? *International Journal of Sport and Exercise Psychology*, 10(1), 9-23.
- Fraser-Thomas, Côté, J., & Deakin, J. (2005). Youth sport programs: An avenue to foster positive youth development. *Physical Education and Sport Pedagogy*, 10(1), 19-40.
- Geldhof, J., Bowers, E., Mueller, M., Napolitano, C., Callina, K., & Lerner, R. (2014). Longitudinal analysis of a very short measure of positive youth development. *Journal of Youth Adolescence*, 43, 933-949.
- Granic, I., & Hollenstein, T. (2003). Dynamic systems methods for models of developmental psychopathology. *Development and Psychopathology*, 15, 641-669.
- Granic, I., & Hollenstein, T., Dishion, T.J., & Patterson, G.R. (2003). Longitudinal analysis of flexibility and reorganization in early adolescence: A dynamic systems study of family interactions. *Developmental Psychology*, 39, 606-617.
- Hellison, D. (2011). *Teaching personal and social responsibility through physical activity* (3.a ed.). Champaign: Human Kinetics.
- Hollenstein, T. (2007). State space grids: Analyzing dynamics across development. *International Journal of Behavioral Development*, 31(4), 384-396.

Hollenstein, T. & Lewis, M.D. (2006). A state space analysis of emotion and flexibility in parent-child interactions. *Emotion*, 6, 656-662.

Holt, N., Neely, K., Slater, L., Camiré, M., Côté, J., Fraser-Thomas, J., . . . Tamminen, K. (2017). A grounded theory of positive youth development through sport based on results from a qualitative meta-study. *International Review of Sport and Exercise Psychology*, 10(1), 1–49.

Horn, T.S. (2008). Coaching effectiveness in the sport domain. In T.S. Horn (Ed.), *Advances in sport psychology*, (3rd Ed.) (pp.239-268). Champaign, IL: Human Kinetics.

Jones, R.L. & Wallace, M. (2006). The coach as ‘orchestrator’: More realistically managing the complex coaching context. In R.L. Jones (Ed.), *The sports coach as educator: Re-conceptualizing sports coaching* (pp.51-64). London: Routledge.

Kahan, D. (1999). Coaching behaviour: A review of the systematic observation research literature. *Applied Research in Coaching and Athletics Annual*, 14, 17-58.

Lamey, A., Hollenstein, T., Lewis, M.D., & Granic, I. (2004). GridWare (Version 1.1). [Computer software]. <http://www.statespacegrids.org>.

Lemyre, F., Trudel, P., & Durand-Bush, N. (2007). How youth-sport coaches learn to coach. *The Sport Psychologist*, 21, 191-209.

Lewis, M.D. (2000). The promise of dynamic systems approaches for an integrated account of human development. *Child Development*, 71, 36-43.

Lewis, M.D., Lamey, A.V., & Douglas, L. (1999). A new dynamic system method for the analysis of early socioemotional development. *Developmental Science*, 2, 457-475.

Li, W., Wright, P. M., Rukavina, P. B., & Pickering, M. (2008). Measuring student s perceptions of personal and social responsibility and the relationship to intrinsic motivation in urban physical education. *Journal of Teaching in Physical Education*, 27(2), 167-178.

MacDonald, D., Côté, J., Eys, M., & Deakin, J. (2012). Psychometric proprieties of the youth experience survey with young athletes. *Psychology of Sport and Exercise*, 13(3), 332-340.

MacDonald, D. J., & McIsaac, T. (2016). Quantitative assessment of positive youth development in sport. In N. Holt (Ed.) *Positive youth development through sport* (pp. 83-96): Routledge.

Martins, P., Rosado, A., Ferreira, V., & Biscaia, R. (2015). Examining the validity of the personal-social responsibility questionnaire among athletes. *Motriz. Revista de Educação Física*, 21(3), 321-328.

Martins, P. (2014). *Desenvolvimento pessoal e social em desporto : relações entre responsabilidade pessoal e social, orientação motivacional e atitudes face ao desporto*. [Personal and social development in sport: Relationships between personal and social responsibility, motivational orientation and attitudes towards sport] (Tese de Doutoramento), Universidade de Lisboa. Faculdade de Motricidade Humana., Lisboa.

Newman, T., Ortega, R., Lower, L., & Paluta, L. (2016). Informing priorities for coaching education: Perspectives from youth sport leaders. *International Journal of Sports Science & Coaching*, 11(3), 436-445.

Petitpas, A., Cornelius, A., Raalte, J., & Jones, T. (2005). A framework for planning youth sport programs that foster psychosocial development. *The Sport Psychologist*(19), 6-80.

Poczwardowski, A., Barott, J.E, & Jowett, S. (2006). Diversifying approaches to research on athlete-coach relationships. *Psychology of Sport and Exercise*, 7, 125-142.

Project SCORE. (2015). About SCORE. from <http://www.projectscore.ca/about-score> Rathwell, S., & Young, B. (2016). An examination and validation of an adapted youth experience scale for university sport. *Measurement in Physical Education and Exercise Science*, 20(4), 208–219.

Regueiras, L. (2012). *Desenvolvimento da responsabilidade pessoal e social dos jovens através do desporto:uma análise centrada na perspetiva de especialistas* [Personal and social responsibility development through sport: an analysis focused on experts perspectives]. (Tese de Doutoramento), Universidade do Porto. Faculdade de Desporto. Porto.

Resende, R., Sequeira, P., & Sarmento, H. (2016). Coaching and coach education in Portugal. *International Sport Coaching Journal*, 3, 178-183.

Santos, F., Camiré, M., & Campos, H. (2016). Youth sport coaches’ role in facilitating positive youth development in Portuguese field hockey. *International Journal of Sport and Exercise Psychology*, 1-14.

Santos, F., Camiré, M., MacDonald, D., Campos, H., Conceição, M., & Silva, A. (2017). Youth sport coaches’ perspective on positive youth development and its worth in mainstream coach education courses. *International Sport Coaching Journal*, 4(1), 38-46.

Santos, F., Corte-Real, N., Regueiras, L., Dias, C., & Fonseca, A. (2016). Personal and social responsibility development: exploring the perceptions of Portuguese

Youth football coaches within competitive youth sport. *Sports Coaching Review*, 6(1) 1-18.

Santos, F., Corte-Real, N., Regueiras, L., Strachan, L., Dias, C., & Fonseca, A. (2017).

Portuguese football coaches’ role in facilitating positive development within high performance contexts: Is positive development relevant? *International Sport Coaching Journal*, 4(2), 147-161.

Santos, F. (2017). *O futebol e o desenvolvimento positivo dos jovens: das peceções às ações dos treinadores* [Football and positive youth development: from coaches perceptions to their practices]. (Tese de Doutoramento), Universidade do Porto. Faculdade de Desporto. Porto.

Sparkes, A., & Smith, B. (2016). *Qualitative research methods in sport, exercise and health: from process to product*. New York: Routledge.

Steenbeek, H., & Van Geert, P. (2005). A dynamic systems model of dyadic interaction during play of two children. *European Journal of Developmental Psychology*, 2, 105-145.

Steenbeek, H., & Van Geert, P. (2007). A theory and dynamic model of dyadic interaction: Concerns, appraisals, and contagiousness in a developmental context. *Developmental Review*, 27, 1-40.

Strachan, L., Côté, J., & Deakin, J. (2011). A new view: exploring positive youth development in elite sport contexts. *Qualitative Research in Sport, Exercise and Health*, 3(1), 9–32.

Strachan, L., MacDonald, J., & Côté, J. (2015). Project SCORE!: Coaches’ perceptions of an online tool to promote positive youth development in sport. *International Journal of Sports Science and Coaching*, 11, 108-115.

Sullivan, P., MacKenzie, K., & Marini, M. (2015). Confirmatory factor analysis of the youth experiences survey for sport (YES-S). *Open Journal of Statistics*, 5, 421- 429

Thelen, E., & Smith,L.B. (1998). Dynamic systems theories. In W. Damon (Series Ed.) & R.M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol.1 Theoretical models of human development* (5th ed.) (pp.563-633). New York: Wiley.

Van Geert, P. (1998). A dynamic systems model of basic developmental mechanisms: Piaget, Vygotsky, and beyond. *Psychological Review*, 105, 634-677.

Vella, S., Crowe, T., & Oades, L. (2013). Increasing the Effectiveness of Formal Coach Education: Evidence of a Parallel Process. *International Journal of Sports Science & Coaching*, 8(2), 417-430.

Vella, S., Oades, L., & Crowe, T. (2013). A pilot test of transformational leadership training for sports coaches: Impact on the developmental experiences of adolescent athletes. *International Journal of Sports Science & Coaching*, 8(3), 513-530.

Vierimaa, M., Erickson, K., Côté, J., & Gilbert, W. (2012). Positive youth development: A measurement framework for sport. *International Journal of Sports Science & Coaching*, 7(3), 601-614.

Weiss, M. R., Stuntz, C. P., Bhalla, J. A., Bolter, N. D., & Price, M. S. (2013). ‘More than a game’: Impact of The First Tee life skills pro-

Appendix A

The University Sport Experience Survey (USES)

1	2	3	4	5	6	7
Strongly Disagree	Disagree	Somewhat Disagree	Uncertain	Somewhat Agree	Agree	Strongly Agree

As a result of my involvement in university sport:

1.

I am better at setting goals for myself
2.

I am better at finding new ways of achieving my goals
3.

I am more capable of putting all my energy into an activity that is important to me
4.

I am better at pushing myself
5.

I more capable of focusing my attention
6.

I am better at developing plans for solving a problem
7.

I am better able to organize my time and not procrastinate
8.

I am better at setting my priorities
9.

I am better at practicing self-discipline
10.

I believe that I have improved my skills for finding information
11.

I feel that I have improved my computer skills and ability to use the internet
12.

I believe I have improve my creative skills
13.

I believe my artistic skills have improved
14.

I have a better understanding of what I have in common with people from different backgrounds
15.

I have become better acquainted with someone from a different ethnic groups
16.

I have made more friends that come from different social classes (richer or poorer)
17.

I discuss morals and values more often with others
18.

I am more aware of the different obstacles other people face
19.

I am more appreciative of other people’s backgrounds
20.

I am more aware of how my emotions and attitude affect others in group situations
21.

I am better at giving feedback
22.

I am better at taking feedback
23.

I know more about the challenges of being a leader
24.

I am more confident that I can rise to the challenge when others are counting on me
25.

I am better at being in charge of a group of peers
26.

I am better at supporting others
27.

I am more capable of standing up for myself
28.

I believe I have come to know more people in the off-campus community
29.

I feel more supported by the off-campus community
30.

I feel more a part of my off-campus community
31.

I am frequently unable to study enough for tests
32.

I am unable to do things with family more often
33.

I am often stressed
34.

I often feel over-worked
35.

I often do things that are morally inappropriate
36.

I often consume alcohol
37.

I frequently take drugs
38.

I often feel like I don’t belong
39.

I often feel left out
40.

I am frequently exposed to social cliques
41.

I am frequently exposed to leaders who are controlling and manipulative
42.

I am frequently exposed to leaders who make inappropriate sexual comments or jokes
43.

I am frequently exposed to leaders who put down my ideas
44.

I am frequently exposed to leaders who blame me for things beyond my control
45.

I am often exposed to leaders who play favorites
46.

I am often exposed to leaders who talk down to me

Note. Initiative (items 1-9), Basic Skills (items 10-13), Interpersonal Relationships (items 14-19), Teamwork and Social Skills (items 20-27), Adult Networks and Social Capital (items 28-30), Stress (items 31-34), Negative Peer Interactions (items 35-37), Social Exclusion (items 38-40), Inappropriate Adult Behavior (41-46).

Appendix B

Extended Description of Responsibility-Based Teaching Strategies

Modeling respect (M): Teacher models respectful communication. This would involve communication with the whole group and individual students. Examples include using students’ names, active listening, making eye contact, recognizing individuality, maintaining composure, developmentally appropriate instruction, talking ‘with’ rather than ‘at’ students, showing an interest in students, and unconditional positive regard. Counter-examples include indifference, disengagement, losing temper, and deliberately embarrassing a student.

Setting expectations (E): Teacher explains or refers to explicit behavioral expectations. Examples include making sure all students know where they should be and what they should be doing at any given time; giving explicit expectations for activity or performance; explaining and reinforcing safe practices, rules, and procedures, or etiquette.

Opportunities for success (S): Teacher structures lesson so that all students have the opportunity to successfully participate and be included regardless of individual differences. Examples in physical activity include making appropriated adaptations for inclusion and providing opportunities for practice, skill refinement, and game play. Examples in less active modes include allowing students to volunteer answers in a discussion or succeed in a non-physical task.

Fostering social interaction (SI): Teacher structures activities that foster positive social interaction. Examples include fostering student–student interaction through cooperation, teamwork, problem solving, peer-coaching, partner drills where communication is encouraged, and conflict resolution or debriefing. Counter-examples include random student interactions not fostered or supported by the teacher and pseudo group discussions that only involve student–teacher exchanges.

Assigning management tasks (T): Teacher assigns specific responsibilities or management-related tasks that facilitate the organization of the program or a specific activity. Examples include asking students to take attendance, serve as timekeeper, set up equipment, keep score/records, or officiate a game.

Leadership (L): Teacher allows students to lead or be in charge of a group. Examples include allowing students to demonstrate for the class, lead a station, teach/lead exercises for the whole class, or coach a team.

Giving choices and voices (V): Teacher gives students a voice in the program. Examples include letting students engage in group discussions, vote as a group, and make individual choices; inviting student questions or suggestions, eliciting student opinions, and letting students evaluate the teacher or program.

Role in assessment (A): Teacher allows students to have a role in learner assessment. Examples include self- or peer-assessment related to skill development, behavior, attitude, etc.; student-centered goal-setting; and negotiation between teacher and student on their grade or progress in the class.

Transfer (Tr): Teacher directly addresses the transfer of life skills or responsibilities from the lesson beyond the program. Examples of topics include the need to work hard and persevere in school; the importance of being a leader in your community; keeping self-control to avoid a fight after school; setting goals to achieve what students want in sports or life in general; the need to be a good team player when in other contexts, such as the workplace; the value of thinking for yourself to avoid peer pressure and make good life choices.



Integrating Positive Youth Development within Coach Education for Youth Sport Coaches